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Examining the Relationship between Food Thought Suppression and Binge Eating Disorder

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Abstract

Food thought suppression, or purposely attempting to avoid thoughts of food, is related to a number of unwanted eating- and weight-related consequences, particularly in dieting and obese individuals. Little is known about the possible significance of food thought suppression in clinical samples, particularly obese patients who binge eat. This study examined food thought suppression in 150 obese patients seeking treatment for binge eating disorder (BED). Food thought suppression was not associated with binge eating frequency or body mass index but was significantly associated with higher current levels of eating disorder psychopathology and variables pertaining to obesity, dieting, and binge eating.

Thought suppression, or purposely trying to avoid certain thoughts, may have unwanted consequences such as increases in target thoughts at the onset of attempts to suppress, increases in target thoughts following purposeful suppression attempts (the rebound effect) [1,2] and increases in priming of the target thoughts (hyperaccessibility) [2]. The nascent research investigating the relationship between thought suppression and eating behaviors have reported mixed findings. Some studies [3,4,5,6,7] found that the outcomes of thought suppression, such as hyperaccessibility and rebound, do result from attempting to suppress food-related thoughts, whereas one study did not [8,9,10]. The latter study, however, [8] did not examine if the outcomes of thought suppression differed between participants who were currently dieting versus not or healthy weight versus overweight/obese, both of which appear to affect the outcomes of thought suppression [11–13].

In addition to altering frequency of thoughts, food thought suppression may also influence behavior. For example, when chocolate cravers and non-cravers attempted to suppress thoughts about chocolate, those who were instructed to use thought suppression worked harder at a computer game to earn chocolates compared to those not instructed to suppress thoughts, regardless of craving status [14]. Erskine & Georgiou also found that individuals high in restraint consumed more chocolate after a suppression period than did control groups [11]. Similarly, Pop and colleagues [13] found that food thought suppression increased food-related thoughts regardless of weight status, but resulted in increased food intake only

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among overweight and obese persons who reported dieting. More recently, undergraduate women instructed to rely on food thought suppression specific to chocolate ate more chocolate at a post experiment taste test than did those in the control or the acceptance group, who were instructed to pay attention to their cravings. There were no differences, however, during the week-long experiment in number of cravings or chocolate consumed [15].

Although Ward and colleagues posited a link between thought suppression and binge eating over 15 years ago [16], only recently has this hypothesis received empirical attention in nonclinical [17,18] and clinical [19] samples. Food thought suppression may have even greater significance for obese persons with disordered eating such as binge eating disorder (BED). One study comparing matched samples of obese persons with versus without BED reported significantly higher levels of food thought suppression in the BED group [19]. One similar finding between clinical and non-clinical samples was the positive association between food thought suppression and binge eating frequency among women [17,19]. Surprisingly, there was a negative correlation observed between food thought suppression and binge frequency for men with BED [19], which contrasts with the positive associations for nonclinical men who binge eat [17,18]. In addition to binge eating, food thought suppression also may be related to weight cycling [20]. Food thought suppression, therefore, may not only be associated with binge frequency but also weight loss efforts, however, such relationships have not been examined in clinical patients.

The equivocal findings suggest the need for further investigation of possible sex differences in food thought suppression and its association with treatment-related variables such as binge eating episodes. A better understanding of how food thought suppression is associated with obesity and BED may inform interventions targeted at weight loss and binge eating. Thus, the current study sought to replicate and expand the findings of Barnes and colleagues [19] with a larger sample of obese individuals with BED and more rigorous assessment methods, encompassing a broader range of both eating- and weight-related variables. Based on previous research suggesting that women are more likely to endorse specific food thought suppression [17,19], women were hypothesized to report higher levels of food thought suppression than men. Further hypotheses were that food thought suppression would be positively associated with binge eating frequency and eating- and weight-related variables.

Methods

Participants

Participants were 150 (40 men and 110 women) consecutively evaluated, treatment-seeking obese individuals (BMI ≥ 30) who met full *DSM-IV-TR* [21] research diagnostic criteria for BED. Participants responded to advertisements for treatment targeting problems with both binge eating and a desire to lose weight. Participants had a mean age of 48.3 ($SD = 8.6$) years and BMI of 38.8 ($SD = 6.2$). Ethnicity was as follows: 80.0% ($n = 120$) Caucasian, 14.0% ($n = 21$) African-American, 3.3% ($n = 5$) Hispanic, 0.7% ($n = 1$) Asian, and 2.0% ($n = 3$) considered themselves "other."

Procedures

Study procedures were IRB approved and all participants provided written informed consent. Participants were recruited via newspaper advertisements seeking obese men and women who binge eat for treatment studies at a medical school-based program. Exclusion criteria included: pregnancy or breastfeeding, current anti-depressant therapy, medical conditions (heart disease, liver disease, uncontrolled hypertension, hypothyroidism, or diabetes) or certain severe psychiatric illnesses (e.g., bipolar disorder) requiring alternative

treatments. Assessment procedures were performed by trained doctoral-level research-clinicians. BED diagnosis was based on the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I/P) [22]. Participants' height was measured using a wall-mounted measure and weight was measured using a high-capacity digital scale. Participants completed the self-report measures described below.

Measures

The *Eating Disorder Examination* (EDE) [23] is a semi-structured investigator-based interview for assessing eating disorders. The EDE focuses on the previous 28 days, except for the diagnostic items that are rated per the durations stipulated in the *DSM-IV-TR* [21]. The EDE assesses the frequency of different forms of overeating, including *objective bulimic episodes* (OBEs, defined as unusually large quantities of food with a sense of loss of control) which corresponds to the DSM-based definition of binge eating episodes. The EDE also comprises four subscales: Dietary Restraint, Eating Concern, Weight Concern, and Shape Concern, and an overall Global score. The items for the four EDE subscales are rated on a seven point forced-choice format (0–6), with higher scores reflecting greater severity or frequency. The EDE has demonstrated good inter-rater and test-retest reliability in diverse groups, including BED [24].

Food Thought Suppression Inventory (FTSI) [18,25,26] is a self-report measure that includes a single, reliable, and valid factor. Factor analysis with an obese clinical sample of women with BED resulted in an 11-item scale. Scores can range from 11 to 55, with higher scores reflecting higher levels of food thought suppression. The mean score for this sample of women with BED was 34.98 ($SD = 11.29$) [26].

The *Questionnaire for Eating and Weight Patterns-Revised* (QEWP-R) [27] is a self-report measure used to assess eating- and weight-related variables, including: age at overweight onset, age at first binge eating episode, age first lost 10 pounds via a diet, weight cycling (number of times lost and regained 20 or more pounds), and time spent dieting ("Since you have been an adult—18 years old—how much of the time have you been on a diet, been trying to follow a diet, or in some way been limiting how much you were eating in order to lose weight or keep from regaining weight you had lost?").

Results

There were no significant differences in food thought suppression between men ($M = 32.45$, $SD = 12.37$) and women ($M = 34.75$, $SD = 11.48$) based on an independent samples t-test, $t(148) = -1.065$, $p = .289$. Table 1 presents the Pearson's r correlations between the FTSI and EDE subscales and items. Among both women and men, food thought suppression was correlated significantly and positively with the EDE Global score and also with the Eating and Weight Concern subscales.

Table 2 shows the means, standard deviations, and Pearson's r correlations between food thought suppression and current BMI and eating- and weight-related variables overall and separately by sex. Given the possible conceptual overlap between the Eating Concern subscale (e.g., the subscale contains questions such as "Over the past four weeks have you spent much time between meals thinking about food, eating, or calories?") and the Food Thought Suppression Inventory and the moderate correlations between the them ($r = .483$, see Table 1), Table 2 also shows partial correlations between food thought suppression and eating- and weight-related variables after accounting for eating concern levels.

Current BMI was not significantly correlated with food thought suppression in either women or men. For women, food thought suppression was correlated significantly negatively with

age of onset at first binge eating episode; this relationship no longer was significant after partialling out the effects of eating concern. For men, food thought suppression was correlated significantly negatively with age first overweight and at first binge eating episode, and correlated positively with weight cycling and amount of time spent dieting as an adult. After partialling out the effects of Eating Concern scores, the only remaining significant correlation was between food thought suppression and time spent dieting as an adult.

Discussion

Overall, there were few differences between men and women in the patterns of associations between attempting to avoid food-related thoughts and eating- and weight-related variables. Similarly, there were no sex differences in levels of suppressing thoughts of food or eating. Higher levels of food thought suppression were related to increased specific concerns regarding weight and eating and also overall eating psychopathology for both men and women. Due to the possible conceptual overlap and moderate correlations between eating concerns and food thought suppression, we examined the relationship between food thought suppression and eating- and weight-related variables (e.g., weight cycling) both before and after accounting for concerns related to eating. The only remaining significant relationship was for men – those who spent more of their adult lives dieting were more likely to try to avoid food- and eating-related thoughts.

Even after accounting for concerns about eating, men who spent more time dieting as an adult had higher levels of food thought suppression. While preliminary, this result suggests that perhaps there is an additive effect of food thought suppression, the more time someone spends dieting, the more likely they are to report attempting to avoid food related thoughts over time. Any conclusions about the relationships among trying to avoid thoughts of food or eating, eating concerns, and eating- and weight-related variables must be made cautiously, particularly for men, since the analyses may have been underpowered with a sample size of 40. It also is possible that relationships among food thought suppression, eating concerns, and other eating- and weight-related variables may be mediational or moderational, which will require future studies with larger samples of both sexes.

Previous studies using the Food Thought Suppression Inventory relied on participants with healthy weight, overweight, and obese body mass indices, self-reported measurements and assessments of binge eating, and nonclinical samples [17,18,25]. These differences likely explain why previous studies found relationships between food thought suppression and body mass index, binge eating, and sex, whereas the current study did not. The current lack of association between body mass index and food thought suppression likely is due to the limited range since all participants were obese (BMI ≥ 30). The previous studies also relied on self-report height and weight, whereas the current participants were measured by a trained clinician. The nonsignificant relationship between binge eating and food thought suppression may be due to the restricted range of binge eating as all patients met diagnostic criteria for BED (≥ 2 binges per week). Also, binge episodes in the present study were assessed using a clinician-based interview, the Eating Disorder Examination, versus the self-report versus, the Eating Disorder Examination-Questionnaire (EDE-Q). Lastly, the lack of differences between men and women on food thought suppression could be due to overall higher levels of food thought suppression in this clinical sample. To our knowledge, only one other study examined a similar sample of BED individuals [19], but was limited by the use of the self-report EDE-Q, self-reported height and weight, and a much smaller sample size. Therefore, we believe the current study should be considered the most thorough examination of food thought suppression in obese men and women diagnosed with BED to date.

Several limitations should be considered when interpreting our findings. We investigated a primarily Caucasian, female, treatment-seeking sample making it unknown if findings generalize to other minority/ethnic groups and to nontreatment-seeking populations. The differences found between men and women could be a result of unequal sampling of women and men. Our cross-sectional analyses preclude any statements regarding causality. In light of the exploratory nature of this study, we did not correct for multiple comparisons. Had such corrections been made, some significant findings, particularly for men, would not have persisted. Therefore, more research is needed examining food thought suppression in larger samples of men.

In conclusion, within this specific group of obese men and women diagnosed with binge eating disorder, there were few differences in the patterns of associations between the sexes. Men and women reported a similar tendency to avoid food- and eating-related thoughts. Such attempts are related to concerns about eating and weight and overall eating disorder psychopathology for both sexes. The initial finding that men who had spent more time dieting as an adult were also more likely to try not to think about food and eating will require follow-up with larger samples. The emergent relationships among food thought suppression, eating- and weight-related variables, and eating concerns highlight the importance of further investigation of this novel variable, particularly through the use of moderational or mediational models.

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Table 1
The relationship between food thought suppression (FTSI) and the Eating Disorder Examination.

	Mean (SD)	FTSI (r)		
	Overall <i>n</i> = 150	Overall <i>n</i> = 150	Women <i>n</i> = 110	Men <i>n</i> = 40
Eating Disorder Examination				
Global	2.81(0.93)	.372***	.329***	.511**
Restraint	1.82(1.28)	.120	.128	.101
Eating Concern	2.39(1.42)	.483***	.420***	.626***
Weight Concern	3.30(1.12)	.272**	.237*	.334*
Shape Concern	3.75(1.14)	.210*	.173	.278
OBEs in past 28 days	20.44(15.43)	-.001	.038	-.125

Note. OBE = Objective Bulimic Episodes.
* = *p* < .05,
** = *p* < .01,
*** = *p* < .0005.

Table 2

The relationship between food thought suppression (FTSI), eating concern, and eating- and weight- related variables.

	Mean (SD)	FTSI (r)		FTSI (partial r^a)	
		Overall n = 150	Women n = 110	Men n = 40	Men n = 40
Current BMI	39.77(6.14)	.004	-.002	.054	.023
Age of overweight onset	18.54(10.60)	.178*	-.085	-.369*	-.351
Age of first binge episode	24.59(12.72)	-.265**	-.201*	-.346*	-.308
Age first lost 10 pounds via diet ^b	22.42(9.39)	-.118	-.009	-.341	-.346
Weight cycling ^c	3.06(1.01)	.141	.046	.355*	.310
Time spent dieting as an adult ^d	3.37(1.47)	.192*	.083	.399*	.422*

Note. BMI = body mass index.

^a partial correlations between the FTSI and dependent variables with the Eating Disorder Examination-Eating Concern subscale as the covariate.

^b this variable was slightly skewed for men, a SQRT transformation was applied.

^c number of times lost and regained 20 or more pounds.

^d Since you have been an adult—18 years old—how much of the time have you been on a diet, been trying to follow a diet, or in some way been limiting how much you were eating in order to lose weight or keep from regaining weight you had lost.

* $p < .05$,

** $p < .01$.